Space Weather Forecast

Issued on Thursday 30 January 2025 at 00:34 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of isolated M-class flares. G1 minor geomagnetic storms likely 31 Jan with connection to faster solar winds.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity has been Moderate, with one lower Moderate flare in the last 24 hours from the northeast of the disc.

There are currently five sunspot regions visible on the Earth-facing side of the Sun. Three regions have recently emerged from the north-eastern limb and represent the bulk of current activity and magnetic complexity, warranting further analysis as they move onto the solar disc. The remaining sunspots are small and magnetically simple although a new, as yet unnumbered region has developed near centre disk and will be monitored.

No Earth-directed coronal mass ejections (CMEs) have been observed in the last 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind was at generally background levels, ranging from 280-360km/s with some weak CME influence possible. The Interplanetary Magnetic Field, Bt, was mostly weak, but peaked at moderate levels. The north-south component, Bz, mostly varied weakly. Geomagnetic activity was Quiet (Kp0-2).

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate solar activity is expected with a chance of isolated Moderate flares, and a very slight chance of isolated Strong flares, primarily from regions in the northeast of the solar disc.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs currently feature in the forecast, with the outlook dominated by a region of faster solar winds. This feature is expected to bring an increases of solar winds from current background levels towards elevated or strong levels, 550-650km/s, from later Day 1 (30 Jan) or more likely through Day 2 (31 Jan).

Generally Quiet activity (Kp1-2) expected initially. Activity expected to increase to become generally Unsettled to Active (Kp3-4) from late Day 2 (30 Jan) onwards, with the slight chance of G1

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minor storm intervals increasing to a likelihood on Days 2-3 (31 Jan - 01 Feb) with the expected connection to CH11/+.

Energetic Particles / Solar Radiation: Solar radiation is expected to remain at background levels, with only a very slight chance of rising in response to notable flares

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	**G1 to G2**	No	20	60	50	20
Strong	**G3**	No	1	5	2	1
Severe	**G4**	No	1	1	1	1
Extreme	**G5**	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**R1-R2 (M Class)**	Yes	40	40	40	40
Very Active	**R3-R5 (X Class)**	No	5	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	5	5	5	5
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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